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of contact there be drawn a line perpendicular to the diameter; and if from any point in the circumference there be drawn two lines, one to the point without the circle, and another to the foot of this perpendicular, the former of these lines will be to the latter, as the distance of the point without the circle from the centre, is to the radius of the circle. By means of this property, and assuming that the ellipse is the curve whose ordinate, at right angles to its axis, is to the corresponding ordinate of the circle, described upon this axis as a diameter, in a constant ratio, the author proves the following propositions relating to this curve:—

1. The rectangle of the abscissæ is to the square of the ordinate, as the square of the semiaxis major to the difference of the squares of the semiaxis major and the excentricity.

2. The distance of any point in the curve from the focus, is to its distance from the directrix, as the excentricity is to the semiaxis major.

3. The sum of the distances of any point in the curve from the two foci is equal to the axis major.

By a method nearly similar to that employed for the ellipse, and assuming that the hyperbola is a curve in which the rectangle of the abscissæ is to the square of the ordinate, as the square of the ordinate in a circle, described upon the axis major as a diameter, is to the square of the subtangent, the author shows, first, that the distance of any point in the curve from the focus is to its distance from the directrix, as the distance between the foci is to the axis major; and secondly, that the difference of the distances of any point in the curve from the two foci is equal to the axis major.

3. "On the diurnal Temperature of the Earth's surface, with the discussion of a simple formula for ascertaining the same." By S. M. Drach, Esq., F.R.A.S. Communicated by John Lee, Esq., LL.D., F.R.S.

The author investigates the several causes which influence the daily temperature of any point at the earth's surface. He employs the term *Thermal establishment* to denote the retardation of the effects of solar light caused by atmospherical conduction and by local circumstances, in the same manner that the term *Tidal establishment* has been used to express the local constant by which the astronomical effects on the waters of the ocean are delayed. After explaining the formation of the tables and diagrams given at the end of the paper, and detailing the conclusions derivable from them, the author enters into a review of the perturbing causes, investigates the analytical expression for the daily heat, and concludes with some observations on isothermal lines, on the influence of the friction resulting from the rotation of the earth about its axis, and on the agency of electricity.